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Theme 2 Food, Agriculture, Fisheries and Biotechnologies

Deliverables 47 & 48

D47: Report on Knowledge Transfer achieved

&

D48: Impact Assessment of Knowledge Transfer achieved

Project Acronym : AQUAINNOVA

Project title : Supporting governance and multi-stakeholder participation in aquaculture research and innovation

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II. OBJECTIVES

One of the main objectives of AQUAINNOVA was to identify actions and their implementation potential to improve the competitiveness of professional European aquaculture and related industries. A considerable amount of cooperation, collaboration and stakeholder consultation went into the development of the Vision and the accompanying strategic research agenda(s). This was achieved and detailed in the final Vision document, “The future of European Aquaculture” which was officially launched by EATiP in Brussels on the 31st October 2012. In order to maximise the potential for impact of this comprehensive product, a full scale transfer strategy was undertaken.

Secondly, with a view to achieving optimal exploitation and enhancing the impact of EU-funded aquaculture relevant research, AQUAINNOVA strived to ensure that Knowledge Outputs from FP6 and FP7 funded marine research were transferred to the relevant End Users to deliver both direct and indirect benefits to individuals and organisations. The aim of the Knowledge Transfer was not necessarily to generate a financial return to an individual, research group or institution but to deliver the widest range of benefits to society from the significant aquaculture Research being conducted at European level.

III. RATIONALE

The EATiP was created in 2008 for the purpose of identifying and implementing actions so as to improve the competitiveness of professional European aquaculture and related industries, specifically through the application of knowledge-based activities. A statutory goal of the EATiP is to develop measures and structures that will improve the research, development and innovation conditions so as to support the sustainable development of European aquaculture.

In 2009, the EATiP responded to the call KBBE-2009-1-4-12: Supporting governance in aquaculture research and Innovation, in order to have a resource available to support their efforts and determinations in achieving their goals.

‘AQUAINNOVA’ – “Supporting governance and multi-stakeholder participation in aquaculture research and innovation”, an FP7 funded project focusing on the creation of an international framework that will facilitate the development of vision documents and strategic research agendas on the sectoral components of European aquaculture.”

Understanding how Knowledge Transfer is achieved in European aquaculture – what is actually done, advantages and shortcomings – is an integral component of Aquainnova.

IV. KNOWLEDGE MANAGEMENT – METHODOLOGY & ¹RESULTS

The Knowledge Management methodology applied in the AQUAINNOVA project is based on the methodology originally developed in the FP7 MarineTT project. The methodology focuses on Knowledge Outputs; a "Knowledge Output" for the purposes of this project is the term used to describe a unit of knowledge that has been generated out of a scientific project. It is not limited to de-novo or pioneering discoveries but may also include new methodologies/processes, adaptations, insights, alternative applications of prior know-how/knowledge (*Definition developed by AquaTT in the context of Knowledge Management in the MarineTT project*).

AQUAINNOVA recognised that it is critical to capture, understand and analyse the Knowledge Outputs generated by research so as to demonstrate the wider value and benefit of these outcomes to European society and economy. There are three phases defined in the Knowledge Management Methodology; Collect & Understand, Analysis & Consult and Due Diligence & Transfer.

Collect & Understand

Over 300 Knowledge Outputs were identified during the collect and understand phase of the AQUAINNOVA Knowledge Management methodology. Please see Deliverable 46 Report on prioritisation of knowledge identified for transfer, sorted by user groups.

Analyse & Consult

An Expert panel reviewed and assessed each Knowledge Output of each project and provided insights and suggestions for potential exploitation opportunities, possible end-users and different applications for use. They also highlighted any issues with the details of the Knowledge Outputs provided by the coordinators and as such coordinators were contacted for clarification. The expert review also incorporated a prioritisation exercise where the expert panel were asked to grade every Knowledge Output in respect of its potential to have impact on the Aquaculture sector (low medium or high). As a result of this exercise, AQUAINNOVA were able to create a shortlist of 24 projects to proceed to the Due Diligence stage of the transfer methodology. Of these 24 projects², 12 were combined to create three different clusters. Please see Deliverable 45 for "Development of Delivery Plans per Knowledge Cluster" (Delivery methods, costs, medium). Please see Annex 1 for the shortlist.

¹ Please see Deliverable 18 Methodology and Templates for Knowledge Transfer (WP7)- knowledge delivery plan, multiplier interactions

² Please see Annex 1 for Shortlist.

Due Diligence

AQUAINNOVA team members with relevant competence and experience were selected to carry out a Due Diligence exercise on the short list of 24 projects. Due Diligence in this respect was to confirm the reality of all the details associated with each Knowledge Output including

- Conditions and status of IP,
- Knowledge transfer completion details,
- Correct identification of end-users and
- Whether there would be an opportunity to cluster similar Knowledge Outputs to increase the potential for impact.

Unfortunately the AQUAINNOVA team faced challenges in developing delivery plans for all the projects in the short list.

The time allowance was severely under- estimated to carry out a comprehensive Due Diligence exercise which is an essential pre-cursor to carrying out practical knowledge transfer activities.

This was further complicated by the lack of reaction of certain FP Project coordinators or consortium members, leading to delays or lack of communication; after discussion with the Aquainnova coordinator and core team members, it was decided to stop exercises where there was no reaction and concentrate human resources on additional required tasks within Aquainnova.

V. KNOWLEDGE TRANSFER RESULTS

Targeted Knowledge Transfer is a complex process and requires considerable investment of human resources if it is to be effective.

Building upon the work carried out in the Due-Diligence³, the AQUAINNOVA Knowledge Transfer team (WP7) analysed the results for each project and determined the possibility of developing a transfer strategy. AQUAINNOVA team members also saw the importance in investigating the value chain of the targeted end-users using their personal expertise as well as the AquaTT, EAS, Eurofish and EATiP extensive networks of stakeholders.

Unfortunately, this exercise encountered significant barriers in developing knowledge delivery plans for each of the shortlisted projects.

- One of the biggest obstacles was the significant time it takes to engage with project coordinators, in particular on closed projects.
- Retrospective engagement is a problem as coordinators and partners have moved on to new projects and have no incentives/rewards to collaborate and help carry out knowledge transfer.
- The result of this barrier was that engagement was usually based on the goodwill and time availability of the coordinators.
- As can be seen in the due-diligence project logs (see annex II), multiple attempts and approaches were used to try and connect with coordinators or senior project staff with only limited success.

³ Please see Annex 2 for due diligence results per short listed project.

In parallel to the external barriers mentioned above, within the Aquainnova project consortia, there was also a finite amount of time and resources that could be committed to the knowledge transfer work package.

The lack of response, or even interest, from RTD/Industry personnel on past projects is a core issue in relation to this and will be debated further. Allocating valuable human resources to follow this aspect proved to be time-consuming and frustrating, yet it is necessary so as to assure cooperation with project coordinators/participants so as to carry out subsequent tailor-made knowledge transfer.

Given the timeline of the project, it was necessary to allocate consortium resources to finishing other key products of the project.

VI. INDIVIDUAL TRANSFER STRATEGY RESULTS

An Individual Transfer Strategy was developed for one Case Study which was chosen to highlight the benefits in investing in Knowledge Transfer and demonstrating the efficacy of pro-active, informed actions for knowledge transfer.

A. THE “PROSPARE” CASE STUDY

Title: Progress in Saving Proteins and Recovery of Energy (www.prospare.eu)

Description: PROSPARE aimed to advance the current KBBE knowledge base on biotechnologies for the biotransformation of animal-by-products (AB-P) residues into high-quality high-value protein components and for the production of biodiesel. Novel scientific methods and systems technology created through PROSPARE now provides innovative production solutions to the nutrition and energy industry, and as a result eliminates the environmental impact of production residues.

Project contact: Dr. Giulio Mongia, CoreBioTech Ltd.

High potential Knowledge Output: A novel patented technology to convert by-product from the poultry industry, including feathers, into peptide mixtures of high nutritional, sensory and functional value for use in the food and feed industry.

Innovative Factor:

- The technology makes protein and lipid recovery from food by-products feasible
- The technology and systems can be adapted to utilise other waste streams and animal by-products
- The technology can potentially provide the fish feed sector with a sustainable, fully traceable source of protein for use in feeds
- The peptide hydrolysates produced during the process are tasteless, soluble, and 100% digestible
- The peptide hydrolysates have undergone rigorous independent chemical analysis and are compliant with current safety standards.

AQUAINNOVA Identified End Users: Fish Feed manufacturing companies

AQUAINNOVA Identified Application: After testing, validation and registration as a feed additive, the application would provide fish feed companies with an alternative fully traceable source of protein in their products This could allow feed companies to be more competitive, more cost effective and more sustainable.

Transfer Strategy:

AQUAINNOVA investigated the potential of this new technology to a sector which was outside the original scope and target users of PROSPARE. Originally the project focused on any industry involved in feed production particularly in agriculture and also the bio-diesel industry and although Fish Feed manufacturers were approached at the beginning of the project they were not kept involved. Costs of fish meal for use by fish feed companies can vary in price and availability can also vary, as a result there is a need for fish feed companies to source alternative supplies of naturally produced protein as a substitute to fish meal.

Results:

Through the interview with the project contact and by using the advice of the expert panel, the KT team successfully recognised alternative End Users for PROSPARE, namely the CEOs, R&D managers and Feed Technology Managers of the main fish feed companies in Europe. In addition, FEFAC (European Feed Manufacturer's Federation) was identified as a potential multiplier.

The main barrier to uptake of the PROSPARE Outputs was due primarily to the lack of awareness by End-Users who did not know that this new technology and source of novel protein existed.

The Transfer strategy involved analysing the identified end-user, recognising their ability to absorb technical information, understanding the best method to provide new knowledge to them and also to facilitate the connection between interested end-users with the PROSPARE team.

Medium: AQUAINNOVA developed a technical factsheet with support from the PROSPARE contact.

Content: This factsheet explained the potential application and benefits of the PROSPARE technology

Channel: The factsheet was sent to twelve identified individuals from six major fish feed manufacturing/development companies across Europe.

Measurement of Transfer: the email requested that they reply to the mail at which point more information could be sent and the End User could engage directly with the IP owner.

Impact of Transfer: The reaction from the feed companies to the PROSPARE technology was quick (responses were recorded within two days) with all but one of the targeted End Users not responding.

All of the commercial companies involved were interested to learn more about the technology and proteins, with many asking for chemical breakdowns, samples of the finished product for internal testing and requests into patent information.

PROSPARE Follow-up Mailing History

Organisation	Response
Bio-Mar	Will discuss internally and get back to you
Aller Aqua	Request for samples of FFP and FAP for own analysis also requested information on chemical analysis undertaken by Ghent University as part of Prospare
Skretting	<ul style="list-style-type: none"> • Request for chemical analysis sheet and more background information • Will discuss internally and request to know if FAP was registered for inclusion in fish feeds in the EU • Want to know if product or technology was patented and is so to provide patent numbers.
EWOS	Requested 100 g of sample product for independent analysis
INVE	No response
FEFAC	12/01/13 forwarded mail to feed expert because "As we are not in a position in FEFAC to evaluate the relevance and the interest of such new technology for the fish feed sector, we would be grateful if you could share your views with us."

'Prospare' short term impact: Four of the major European fish feed companies were made aware of the new technology and potential alternative feed additive. By their positive responses and requests for further information and validation AQUAINNOVA understands that awareness of this knowledge was welcomed by the End Users. Added to this is the fact that this knowledge is timely following the European Commission's decision to adopt and publish a new regulation allowing non-ruminant processed animal proteins (PAPs) exclusively for use for fish feeding from June 2013. At the time of writing the Prospare team were responding to the above requests.

Prospare Long term impact projection: After testing, validation and registration as a feed additive, the application would provide fish feed companies with an alternative fully traceable source of protein in their products. This could allow feed companies to be more competitive, more cost effective and more sustainable.

VII. MULTIPLIER INTERACTION RESULTS

Significant support structures exist to support the European aquaculture industry in its development at an international, national and regional basis (e.g. sectoral associations, Innovation Relay Centres, development agencies, regional business bodies, interbranch and producer organisations).

AQUAINNOVA classified these organisations as potential multipliers due to part of their mandate being related to Knowledge Transfer to the industry. Due to the limited resources available in the AQUAINNOVA project for KT and the fact that a major barrier to effective uptake of EC research results may be due to lack of awareness of the new knowledge, it was decided to invest significant efforts in identifying and engaging with multipliers who would be able to take forward the collected AQUAINNOVA Knowledge Outputs and transfer them to their target customer bases as part of their own remits. Of particular value in facilitating multiplier interaction was the Marine Knowledge Gate.

A. MARINE KNOWLEDGE GATE

A major tool for making the AQUAINNOVA Knowledge Outputs accessible to multipliers and also directly to end-users was the Marine Knowledge Gate, an online portal designed to collate, manage and deliver information from EC-funded marine research projects and their Knowledge Outputs. Each Knowledge Output Table per project identified by the AQUAINNOVA collection phase was included in the MarineTT Knowledge Gate (www.kg.eurocean.org). The Marine Knowledge Gate 1.0 provides tailored search functionalities that allow users to extract both quantitative and qualitative information for further analysis. The search options available can be divided into the two main interlinked components of the InfoBase, Projects and Knowledge Outputs.

By providing free and easy access to the exploitable results of EU funded marine and technology projects, the Marine Knowledge Gate 1.0 provides a central repository of information for potential multipliers and end-users of the knowledge generated by marine research in Europe. Contact details of the knowledge producer are always provided facilitating the interaction with potential users of the knowledge and hence acting as a passive Knowledge Transfer tool. Please see Annex 3 for a snapshot of the Marine Knowledge Gate (www.kg.eurocean.org).

VIII. EATIP KNOWLEDGE TRANSFER RESULTS & IMPACT

A. KNOWLEDGE TRANSFER OF EATIP, ITS VISION & SRIA

During Aquainnova, each Thematic Working Group prepared draft documents of their individual Strategic Research and Innovation Agendas (SRIAs) in advance of sector-specific workshops. These SRIA documents included the Vision of each thematic area as well as their Goals and Sub goals to achieving the overall Vision that was agreed during the project.

Participants of each workshop were sent these documents in advance of the workshop and were asked to study them before using the workshop to openly discuss and critique them.

Aquainnova used these workshops to familiarise all stakeholders with the concept of an overarching Vision for the Aquaculture sector with a realistic and tangible SRIA based on the experience and expertise of each stakeholder in the sector.

B. WORKSHOPS⁴

Part of the process for directly involving stakeholders in the debate was through the organisation of 4 trans-national thematic workshops, which were dedicated to facilitating dialogue between National and European policy makers, researchers, Industry and other stakeholders in aquaculture. The four stakeholder consultations were as follows:

- [The Future of Freshwater Aquaculture](#) – Warsaw (Poland) - 15&16 June 2011
- [The Future of Coldwater Marine Aquaculture](#) – Oslo (Norway) - 21&22 September 2011
- [Mediterranean & southern Aquaculture](#) – Madrid (Spain) - 16&17 November 2011
- [Shellfish Aquaculture](#) – Bordeaux (France) – 15&16 February 2012

Each stakeholder consultation workshop provided important outcomes;

1. Informing relevant stakeholders of the objectives of Aquainnova, EATiP function & objectives, the Vision and the accompanying Strategic Research and Innovation Agenda(s)
2. Using compilations of relevant sector-specific technical leaflets to inform the stakeholders of each sector of current and past research results relevant to that sector
3. A specific report, detailing the conclusions relative to issues affecting the Vision document and Strategic Research Agenda.
4. A recommended plan of action for the Thematic Areas (identified by EATiP) and for the Technology Platform (post-project) itself.

⁴ Please see Deliverables 16, 36 and 39 for workshop methodologies, proceedings and results.

C. KNOWLEDGE TRANSFER OF RTD RESULTS FROM EU-FUNDED AQUACULTURE RELATED PROJECTS

Compilations of the Technical leaflets (TLs)⁵ of project results relevant to each sector above were distributed at each workshop, ensuring high visibility across the participants who included representatives for Industry and aquaculture associations, government representatives, research institutions, research funding agencies and other stakeholders in the sector. 100 printed compilations were prepared for each workshop, each participant receiving one copy – surplus copies were distributed to FEAP representatives and by demand to the EATiP Secretariat.

The workshops provided specific and important opportunities for dissemination activities on European RTD projects of relevance to the theme in question. As well as providing the compilations of relevant TLs, there were also selected presentations. These presentations and the TLs are available online through the EATiP website (www.eatip.eu) as well as being distributed through the membership of the EATiP.

1. SPECIFIC INFORMATION FOR CONSUMER ORGANISATIONS⁶

AQUAINNOVA also developed a synthesis of the Technical leaflets composed of the results and Outputs of aquaculture research funded by the EU made especially for consumer interests. These covered RTD of a direct nature to consumers but also related interest points (environment, welfare, feed composition...)

This compilation was presented to the European Consumers' Organisation (BEUC) in response to feedback received from the 41 member organisation. This method allowed the consumer organisations in different European regions to better understand the research currently targeting different challenges and topics in European aquaculture.

It was presented to the BEUC on October 2nd 2012 and was positively received. 40 copies were distributed to BEUC and the 16 representative participants.

It was concluded that the provision of fact-based information that addresses the concerns of consumer members of the BEUC organisations can be a useful service to the food policy officers of those organisations, and this was proposed by the Aquainnova representative. It was noted that several issues of concern that were debated have, in fact, been resolved or reflected outdated perceptions (e.g. antibiotic use in salmon farming).

⁵ Please see Deliverable 23 on TL compilations for EATiP Thematic Areas and consultation workshops

⁶ Please see Deliverables 43 and 44 on Technical leaflet compilations for Consumer Organisations

2. SECTOR-SPECIFIC COMPILATIONS OF TECHNICAL LEAFLETS

a) FRESHWATER SPECIFIC COMPILATION OF TECHNICAL LEAFLETS

This booklet contains summaries of all freshwater aquaculture related research projects funded under FP5, FP6 and FP7. 50 copies were printed and distributed to stakeholders at the following events:

- The Future of Freshwater Aquaculture workshop, Warsaw (Poland), 15&16 June 2011: had **45** participants (see <http://eatip.ttime.be/default.asp?SHORTCUT=512> for participants' list and workshop report).
- FEAP Presidents' Meeting of National Aquaculture Associations (Rhodes, October 2012)

b) COLDWATER MARINE COMPILATION OF TECHNICAL LEAFLETS

This booklet contains summaries of all cold water marine aquaculture related research projects funded under FP5, FP6 and FP7. 55 copies were printed and distributed to stakeholders at the following events:

- The Future of Coldwater Marine Aquaculture, Oslo (Norway), 21&22 September 2011: had **38** participants (see <http://eatip.ttime.be/default.asp?SHORTCUT=520> for participants list and workshop report)
- FEAP Presidents' Meeting of National Aquaculture Associations (Rhodes, October 2012)
- Other copies were distributed to EATiP Members (by request)

c) MEDITERRANEAN AQUACULTURE COMPILATION OF TECHNICAL LEAFLETS

This booklet contains summaries of all Mediterranean aquaculture related research projects funded under FP5, FP6 and FP7. 50 copies were printed and distributed to stakeholders at:

- The Future of Mediterranean & southern Aquaculture, Madrid (Spain), 16&17 November 2011: had **45** participants (see <http://eatip.ttime.be/default.asp?SHORTCUT=536> for participants list and workshop report)

d) SHELLFISH AQUACULTURE COMPILATION OF TECHNICAL LEAFLETS

This booklet contains summaries of all Shellfish aquaculture related research projects funded under FP5, FP6 and FP7. 55 copies were printed and distributed to stakeholders at:

- The future of Shellfish Aquaculture workshop, Bordeaux (France), 15&16 February 2012: had **47** participants (see <http://eatip.ttime.be/default.asp?SHORTCUT=542> for participants list and workshop report)

3. VISION AND SRIA LAUNCH

“The Future of European Aquaculture” took place successfully on the 30th October 2012 in the Royal Belgian Institute of Natural Sciences, Brussels. The event focused on presenting the final Vision and Strategic Research and Innovation Agenda of the EATiP. Experts from the aquaculture profession, research and development, universities, NGOs, the European Investment Bank, the European Commission and other stakeholder interests debated key questions on forecasts and needs of the sector in 2030. Each participant was given a printed copy of the EATiP Vision and SRIA document and a compilation of all of the Technical Leaflets produced in Aquainnova. 80 copies were printed.

As part of the promotional event, key dissemination techniques were employed to increase the transfer of the EATiP and AQUAINNOVA results.

A Video⁷ was created to highlight the background, context and sheer volume of effort and collaboration which went into the development of the Vision document.

A timeline factsheet⁸, crediting the vast determination and cooperation amongst the various actors involved in the Vision development including the AQUAINNOVA consortium, EATiP board, operating council, Thematic areas, working groups and consultation participants.

IX. CONCLUSION

The Knowledge Transfer activities within Aquainnova were very useful in identifying major barriers and challenges to carrying out effective knowledge transfer. Nonetheless, this was an extremely frustrating and difficult exercise to achieve.

The work has also resulted in significant capacity-building in the partnership which will help in any future knowledge transfer initiatives whilst also providing valuable information to TA6 (Knowledge Management) to help inform how the sector can improve in this essential area.

Some Key Observations from the Knowledge Transfer activities include:

Assessment of past Knowledge Transfer Strategies

- Reviewing the knowledge transfer strategies of past and current projects, there is typically a combination of factors that may be preventing effective knowledge transfer. These include; a lack of motivation; a lack of competence as to how to carry out KT; a lack of time or resources within the project durations; a lack of understanding of End Users and applications for the knowledge; a lack of understanding of what stage the knowledge is at with regards to converting it into tangible applications for the industry.

Knowledge Collection

- The focus on collection Knowledge Outputs was successful in that it forced the coordinators to identify research outputs that had a potential application to an end-user(s)
- Knowledge collection and publication in the Marine Knowledge Gate is beneficial in ensuring awareness of projects and their knowledge outputs. This will help reduce duplication of research and hopefully ensure the future projects build upon past results.

⁷ Please go to <http://www.eatip.eu/Default.asp?SHORTCUT=599>

⁸ Please go to <http://www.eatip.eu/default.asp?SHORTCUT=601>

Knowledge Analysis

- The Knowledge Analysis using domain experts (industry, policy, research) was very useful in identifying the potential of the knowledge outputs and the correct end-users
- A limitation of the analysis was the quality of information provided by coordinators as potential could only be assessed based on what was described.

Knowledge Transfer

- Due Diligence is an essential step in the process to ensure that the knowledge is suitable for transfer.
- The cooperation of the coordinator or knowledge owner is vital to successful Knowledge Transfer, especially where Knowledge Outputs are highly technical and the owner is an expert in their respective field
- A sufficient time frame must be available to carry out knowledge transfer as it requires external inputs, e.g. the interaction and cooperation with the knowledge owners. As found in Aquainnova, this was extremely hard to secure and interactions took place over a long time period.

Recommendations for future FP projects

- Transfer potential and actions must be considered from the beginning of any research project. Analysis of Knowledge Outputs should take place as and when they are completed to allow for sufficient time and resources to be dedicated to Knowledge Transfer within active projects.
- Research consortia should be provided with more requirements, guidelines and assistance to carry out knowledge transfer
- There would be more impact from Research if researchers worked closer with industry to understand end-users priorities and needs.
 - Mid-project reviews could assist this aspect, highlighting promising results and preparing dissemination/communication actions with industry assistance.
- Retrospective Knowledge collection and knowledge transfer is challenging unless those involved in such FP projects have a clear mandate and that EC projects, even when finished, are required to cooperate.
 - Financing specific knowledge transfer actions (post-project) based on evaluated outputs and impact could be considered

The major result of Aquainnova is its final Vision document which was formally launched on October 30th 2012 in Brussels, Belgium. Experts from the aquaculture profession, research and development, Universities, NGOs, the European Investment Bank, the European Commission and other stakeholder interests were presented with the document which was the accumulation of the widest consultation effort ever made on European Aquaculture. The Vision and the goals of the EATiP SRIA are summarised in this document. Moreover, they are based upon the contributions of over 400 experts from industry and other stakeholders, who have identified where aquaculture can contribute to European development priorities and where knowledge gaps need to be overcome to allow successful innovation and development.

They are not only in line with the priorities of Europe 2020, but also respond to the Key challenges identified in the European Council's review of the Sustainable development Strategy⁹ and the Lund Declaration¹⁰. EATiP has defined its three core priorities as being to:

- Establish a stronger relationship between the aquaculture industry and the consumer
- Assure a sustainable aquaculture sector
- Consolidate the role and importance of aquaculture in society.

These priorities are addressed within eight different thematic areas, each of which is identifiable within the European Aquaculture value chain, and for which EATiP created expert groups:

1. Product Quality, Consumer Safety and Health
2. Technology and Systems
3. Managing the Biological Life Cycle
4. Sustainable Feed Production
5. Integration with the Environment
6. Knowledge Management
7. Aquatic Animal Health and Welfare
8. Socio-Economics, Management & Governance

AQUAINNOVA provided the structure and support that allowed each Thematic Area develop its own targets, goals and research requirements, as well as an action plan to ensure that their targets are met. This work led to the definition and aspirations of the Vision for European Aquaculture in 2030 and its SRIA which are described in the Vision document. It also allowed EATiP to adopt seven baseline principles to guide its work and suggests that in order to flourish, the European Aquaculture industry should:

- Provide the European consumer with desirable products of the highest quality at an affordable price
- Assure that Aquaculture's impact on the environment is minimal
- Respect the conditions for optimal livestock health and welfare
- Develop and integrate new technologies within the entire value chain
- Improve economic performance at each level of the value chain
- Guarantee the training and skill development of those working in the sector and attract talented professionals
- Provide clear contributions and benefits to society

These seven principles have been incorporated into the work of the Aquainnova Working Groups and EATiP's Thematic Areas, and into their goals and sub-goals, to unlock the future potential and promote the sustainable growth of European aquaculture.

⁹ See <http://tinyurl.com/manr7a>

¹⁰ See <http://tinyurl.com/ycp2b3t>

Overall, the long term impact that Aquainnova, combined with the EATiP's work, and the Vision and SRIA developed can achieve is significant. By creating a robust and tangible roadmap towards a realistic future for European Aquaculture, the possibility of it transpiring have increased dramatically.

- By identifying past and current research relevant to the promotion of European aquaculture, a gap analysis when compared to the Goals and Sub-goals of the SRIA allows for a more efficient and cost effective research plan moving forward reducing duplication and replication of efforts.
 - By adopting an open and transparent consultation process, including review and validation, AQUAINNOVA and the EATiP ensured the involvement and subsequent from all the stakeholder groups in European Aquaculture from research to policy, producer to consumer.
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X. ANNEX 1: EC AQUACULTURE PROJECT SHORTLIST

Acronym	Full Title	FP	End Year	Impact
IMAQUANIM	Improved immunity of aquacultured animals	FP6	2010	High
TURPRO	Biological optimisation and development of processing methods for turbot farming	FP6	2006	High
WEALTH	Welfare and health in sustainable aquaculture	FP6	2007	High
AQUAMAX	Sustainable Aquafeeds to Maximise the Health Benefits of Farmed Fish for Consumers	FP7	2010	High
INTELFISHTANK	Development of an “intelligent fish tank” for cost-effective aquaculture production	FP6	2008	High
SPEAR	Sustainable options for people, catchment and aquatic resources	FP6	2008	High
PROTENCH	Intensive and sustainable culture of the freshwater species tench	FP6	2007	Medium
RACEWAYS	A hyperintensive fish farming concept for lasting competitiveness and superior production	FP6	2008	High
Prospare	PROgress in Saving Proteins and Recovery of Energy	FP7	2011	High
Sudevab	Sustainable Development of European SMEs Engaged in Abalone Aquaculture	FP7	2010	High
Baseline	SELECTION AND IMPROVING OF FIT-FOR-PURPOSE SAMPLING PROCEDURES FOR SPECIFIC FOODS AND RISKS	FP7	2013	High
Settle	Bivalve conditioning and settlement – keys to competitive hatchery production	FP7	2010	High
Lifecycle	Building a biological knowledge-base on fish lifecycles for competitive, sustainable European aquaculture	FP7	2013	High
Salmotrip	Feasibility study of triploid Atlantic salmon production	FP7	2010	High

A. SHORT LIST OF POTENTIAL CLUSTERS:

Acronym	Full Title	FP	End Year	Impact
Cluster recycling nutrients				
Adapond	Development of an automatic process of in-house collection, storage and application of adaptive bacteria culture for fish farms	FP7	2011	
AQUAETREAT	Improvement and innovation of aquaculture effluent treatment technology	FP6	2007	Medium
Promicrobe	Microbes as positive actors for more sustainable aquaculture	FP7	2013	
Cluster: Preventing Escapes				
CLOSEDFISHCAGE	Development of an innovative, cost effective environmentally friendly closed fish cage for sea based fish farming	FP7	2011	High
PREVENTESCAPE	Assessing the causes and developing measures to prevent the escape of fish from sea-cage aquaculture	FP7	2012	High
ESCAPEPROOFNET	Escapes in European Aquaculture - Development of an Escape-proof Net especially for Cod, Bass and Bream fish farming	FP6	2009	Medium
Smartcatch	The development of a novel remote sensing system to increase safety, efficiency and reduce environmental effects in fishing and aquaculture sector	FP7	2011	High
Cluster: Fish Welfare				
FINEFISH	Reduction of Malformations in farmed fish species	FP6	2009	High
WEALTH	Welfare and health in sustainable aquaculture	FP6	2007	High
BENEFISH	Evaluating the economic impact of maintaining the welfare of farmed fish	FP6	2010	High
WELLFISH	Welfare of fish in European Aquaculture	FP6	2008	
FASTFISH	On farm assessment of stress level in fish	FP6	2006	High